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10/719,738	11/21/2003	Yicheng Chang	E0523-00041	3545

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EXAMINER

PERVAN, MICHAEL

ART UNIT

PAPER NUMBER

2629

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/719,738	Applicant(s) CHANG, YICHENG	
	Examiner Michael Pervan	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5, 11 and 18 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 12-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>4/19/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 6-10, 12-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dehmlow (US 6,552,735; as submitted by applicant) in view of Waterman (US 2005/0052394).

In regards to claim 1, Dehmlow discloses a method for compensating stressed pixels on a display device (col. 2, line 53-col.3 line 12), that includes:

receiving a video data input for displaying a video image frame at a first frequency (col. 2, lines 46-50; video data input (video image data) is received by the controller from both an external source and the processor. Since the information received is video data input (video image data), it is therefore for a displaying video image frame at a first frequency. In the case of Dehmlow, a first frequency is the only frequency);

displaying a primary sub-frame representing at least a part of the video image frame (col. 2, lines 54-55; the primary sub-frame (sampled image) is on the display already), the primary sub-frame having one or more predetermined stressed pixels whose brightness being expected to be compensated (col. 2, line 60-col. 3, line 4; one

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or more predetermined stressed pixels (pixels with luminance decay) have their brightness (luminance) compensated); and

displaying a secondary sub-frame having the predetermined stressed pixels thereon with predetermined compensating brightness (col. 3, lines 3-8; the predetermined stress pixels are compensated by adjusting the brightness (luminance) of each pixel),

Dehmlow does not disclose wherein the primary and secondary sub-frames are displayed sequentially at a second frequency so that the separation of the two sub-frames is undetected by a viewer.

Waterman discloses wherein the primary and secondary sub-frames are displayed sequentially at a second frequency so that the separation of the two sub-frames is not detectable by a viewer (paragraph 36, lines 4-13).

It would have been obvious at the time of invention to modify Dehmlow with the teachings of Waterman, receiving video at a first frequency and displaying sub-frames at a second frequency such that the video displayed appears to be at the first frequency, by incorporating teachings of Waterman into the device of Dehmlow because it will ensure long term reliability and prevent degradation of the LCD (paragraph 36, lines 12-13).

In regards to claims 2, 9 and 16, Dehmlow does not disclose the primary and secondary sub-frames are displayed with the second frequency so that an effective display frequency is equivalent to the first frequency.

Waterman discloses the primary and secondary sub-frames are displayed with the second frequency so that an effective display frequency is equivalent to the first frequency (paragraph 36, lines 9-13).

It would have been obvious at the time of invention to modify Dehmlow with the teachings of Waterman, receiving video at a first frequency and displaying sub-frames at a second frequency such that the video displayed appears to be at the first frequency, by incorporating teachings of Waterman into the device of Dehmlow because it will ensure long term reliability and prevent degradation of the LCD (paragraph 36, lines 12-13).

In regards to claim 3, Dehmlow discloses detecting one or more pixels in the video image frame as the stressed pixels (col. 2, line 63-col. 3, line 3; the stressed pixel (lowest luminance value) is determined).

In regards to claims 4, 10 and 17, Dehmlow discloses determining the compensating brightness for each of the stressed pixels (col. 3, lines 3-4; compensating brightness (luminance) is calculated and applied).

In regards to claims 6, 12 and 19, Dehmlow discloses the determining further comprises:

providing a database supplying accumulative pixel data for one or more stressed pixels (col. 2, lines 58-60; accumulative pixel data (history of pixel status) is provided in a database (memory)), the accumulative pixel data indicating at least an accumulative brightness of each pixel (col. 2, lines 60-65; accumulated pixel data (history of pixel

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status) indicates accumulative brightness (luminance) as long as it is a function of use);
and

comparing one or more pixels in the video image frame against the database to identify the stressed pixels (col. 2, lines 63-65; stressed pixels are identified by using the database (memory) which indicates accumulative brightness (luminance)).

In regards to claims 7 and 13, Dehmlow discloses accumulating pixel data in the database with regard to the identified stressed pixel based on the pixel data thereof for displaying the video image frame (col. 2, lines 58-65; pixel data (status) is accumulated in the database (memory) with regard to identified stressed pixels (luminance decay)).

In regards to claim 8, Dehmlow discloses a method for compensating stressed pixels on a light-emitting diode (LED) based display device (col. 2, line 53-col. 3 line 12 and col. 6, lines 22-30), that includes:

receiving a video data input for displaying a video image frame at a first frequency (col. 2, lines 46-50; video data input (video image data) is received by the controller from both an external source and the processor. Since the information received is video data input (video image data), it is therefore for a displaying video image frame at a first frequency. In the case of Dehmlow, a first frequency is the only frequency);

detecting one or more pixels in the video image frame as stressed pixels (col. 2, line 63-col. 3, line 3; the stressed pixel (lowest luminance value) is determined);

displaying a primary sub-frame representing at least a part of the video image frame (col. 2, lines 54-55; the primary sub-frame (sampled image) is on the display

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already), the primary sub-frame having one or more stressed pixels with at least one of whose display parameters being degraded due to an accumulative usage of the LED display device (col. 2, line 60-col. 3, line 4; one or more predetermined stressed pixels (pixels with luminance decay) have their brightness (luminance) degrades due to usage); and

displaying at least one secondary sub-frame complementing the primary sub-frame and having the detected stressed pixels thereon with the degraded display parameter compensated (col. 3, lines 3-8; the predetermined stress pixels are compensated by adjusting the brightness (luminance) of each pixel),

Dehmlow does not disclose wherein the primary and secondary sub-frames are displayed sequentially at a second frequency so that a viewer perceives the video image frame being displayed without detecting the two sub-frames.

Waterman discloses wherein the primary and secondary sub-frames are displayed sequentially at a second frequency so that the video image frame is displayed without making the sequential displaying of the two sub-frames detectable by a viewer (paragraph 36, lines 9-13).

It would have been obvious at the time of invention to modify Dehmlow with the teachings of Waterman, receiving video at a first frequency and displaying sub-frames at a second frequency such that the video displayed appears to be at the first frequency, by incorporating teachings of Waterman into the device of Dehmlow because it will ensure long term reliability and prevent degradation of the LCD (paragraph 36, lines 12-13).

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In regards to claim 14, Dehmlow discloses the degraded display parameter is a brightness level of the pixel (col. 2, lines 55-63; the degraded (decayed) display parameter is a brightness (luminance) level).

In regards to claim 15, Dehmlow discloses a system for compensating stressed pixels on a light-emitting diode (LED) based display device (col. 2, line 53-col. 3 line 12 and col. 6, lines 22-30), that includes:

means for receiving a video data input for displaying a video image frame at a first frequency (col. 2, lines 46-50; video data input (video image data) is received by the controller from both an external source and the processor. Since the information received is video data input (video image data), it is therefore for a displaying video image frame at a first frequency. In the case of Dehmlow, a first frequency is the only frequency)

means for processing information for one or more stressed pixels in the video image frame (col. 2, lines 46-52).

wherein the primary sub-frame has one or more stressed pixels with at least one of whose display parameters being degraded due to an accumulative usage of the LED display device (col. 2, line 60-col. 3, line 4; one or more predetermined stressed pixels (pixels with luminance decay) have their brightness (luminance) degrades due to usage), and the secondary sub-frame has the detected stressed pixels thereon with the degraded display parameter compensated (col. 3, lines 3-8; the predetermined stress pixels are compensated by adjusting the brightness (luminance) of each pixel).

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Dehmlow does not disclose means for displaying a primary sub-frame and at least one secondary sub-frame sequentially at a second frequency so that the secondary sub-frame is undetected by a viewer.

Waterman discloses means for displaying a primary sub-frame and at least one secondary sub-frame sequentially at a second frequency so that the secondary sub-frame is not detectable by a viewer (paragraph 36, lines 9-13).

It would have been obvious at the time of invention to modify Dehmlow with the teachings of Waterman, receiving video at a first frequency and displaying sub-frames at a second frequency such that the video displayed appears to be at the first frequency, by incorporating teachings of Waterman into the device of Dehmlow because it will ensure long term reliability and prevent degradation of the LCD (paragraph 36, lines 12-13).

In regards to claim 20, Dehmlow discloses the means for processing is a video processor or controller with predetermined processing algorithms embedded therein (col. 2, lines 47-52; video controller (controller 18) receives image data and controls brightness of each pixel, therefore video controller has predetermined processing algorithms embedded therein for controlling the brightness of each pixel).

Allowable Subject Matter

3. Claims 5, 11 and 18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

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Examiner was unable to find a reference or combination of references that taught the limitations of claims 5, 11 and 18.

Response to Arguments

4. Applicant's arguments filed January 4, 2007 have been fully considered but they are not persuasive.

Applicant (on page 10 of argument) argues that Waterman, by virtue of being an LCD technology and using opposite voltage polarities to display video information, would not be used by one of ordinary skill in the art to address stressed and non-stressed pixels since LEDs operate differently than LCDs. Examiner respectfully disagrees.

Even though Waterman uses opposite voltage polarities and is directed to an LCD, these features are not being combined with Dehmlow. The citation of Waterman was merely to show that a display could sequentially display a primary sub-frame and secondary sub-frame at a second frequency (120 Hz) so that the separation of the two sub-frames is not detectable by a viewer. Therefore Dehmlow along with Waterman would still read on claims 1-4, 6-10, 12-17 and 19-20. Claims 1-4 and 6-7 do not mention a LED display, which means that the display device could be a LCD making that argument moot. For the claims referring to LED displays, Waterman also shows that his invention applies to FED displays which is an emission display similar to LED displays.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Pervan whose telephone number is (571) 272-0910. The examiner can normally be reached on Monday - Friday between 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MVP

Mar. 22, 2007

AMR A. AWAD
SUPERVISORY PATENT EXAMINER
